

E-FILED on 5/29/12IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISIONUNITED STATES OF AMERICA,
Plaintiff,
v.
SUIBIN ZHANG,
Defendant.

No. CR-05-00812 RMW

FINDINGS OF FACT, ANALYSIS AND
VERDICT (UNREDACTED VERSION)¹

18 This case was tried by the court sitting without a jury with evidence received from October
19 24, 2012 through November 1, 2012 and with final argument heard on November 11, 2012. Both
20 parties waived a jury. The court now renders its verdict based upon its findings of fact and
21 conclusions of law.

I. CHARGES

23 Defendant Suibin Zhang (“Zhang”) is charged with three counts of computer fraud in
24 violation of 18 U.S.C. §§ 1030(a)(4) and 1030(c)(3)(A) (Counts One through Three); three counts of
25

26 ¹ Marvell has filed a response to the court's request that it identify any portion of the court's
27 Findings of Fact, Analysis and Verdict that it contends reveals a Marvell trade secret. By a filing
28 dated May 17, 2012 Marvell advised that "Marvell does not request that any portions of the Verdict
remain under seal." Accordingly, this unredacted version of the court's Findings of Fact, Analysis
and Verdict is filed in the court file available to the public.

1 theft of trade secrets in violation of 18 U.S.C. § 1832(a)(1), (2) and (4) (Counts Four through Six);
2 one count of unauthorized copying of trade secrets in violation of 18 U.S.C. § 1832(a)(1), (2) and (4)
3 (Count Seven), one count of unauthorized transmission of trade secrets in violation of 18 U.S.C. §
4 1832(a)(2) and (4) (Count Eight); and one count of unauthorized possession of stolen trade secrets in
5 violation of 18 U.S.C. § 1832(a)(3) and (4)(Count Nine). All the alleged trade secrets belong to
6 Marvell Semiconductor, Inc. (“Marvell”), a supplier of semiconductor chips to Netgear, Inc.
7 (“Netgear”). The government charges that Zhang, while still employed as a Project Engineer at
8 Netgear but after he had accepted a job offer from Broadcom Corporation (“Broadcom”),
9 misappropriated Marvell trade secrets to which he had access in his position at Netgear.

II. FINDINGS OF FACT

11 1. Broadcom is a corporation based in San Jose, California that designs and markets
12 semiconductor chips for broadband communication devices.

13 2. Marvell is a corporation based in Sunnyvale, California that designs and markets
14 semiconductor chips for broadband communication devices. Broadcom and Marvell are fierce
15 competitors.

16 3. Netgear is a corporation based in San Jose, California that offers networking products for
17 home offices and small and medium sized businesses. Netgear provides its product designs and
18 specifications on a limited basis to technology suppliers, including Broadcom and Marvell, that
19 supply Netgear with customized products such as switches and transceivers, which Netgear
20 incorporates into its networking devices. Although Netgear's committed projects as of April of 2005
21 did not include a chassis solution for large networks, Netgear's small/medium business group was
22 investigating the technical feasibility and cost of offering such a product.

23 4. At all times relevant to this case, Marvell's products included two switch families named
24 "Link Street" and "Prestera." The Prestera switches include: DX switches which are designed for
25 home use and small to medium-sized business networks, EX switches designed for enterprise and
26 large business networks and MX switches designed for use in metropolitan area networks by
27 telecommunication companies or other large businesses with networks covering large geographic
28 areas.

1 5. (a) Marvell takes many steps to protect the confidentiality of its proprietary
2 information. Access to Marvell's office campus is restricted. Parking lot and building access require
3 card keys and visitors must register and agree to a non-disclosure agreement when entering a
4 building. Visitors must be escorted at all times when on the campus. Some floors in the buildings
5 have additional card key only access.

6 (b) Marvell maintains a restricted access extranet (“Marvell Extranet”). The Marvell
7 Extranet is a private network that uses the Internet to share certain business information with
8 suppliers, vendors and customers. The Marvell website serves as a document repository which
9 enables authorized businesses to have controlled access to Marvell’s proprietary product
10 information. Marvell’s website advises that the use the Marvell Extranet requires acceptance of a
11 Non-Disclosure Agreement (“NDA”), because the information provided within the site represents
12 Marvell’s proprietary information. The NDA requires Marvell Extranet users to maintain the
13 confidentiality of the information available on the site.

14 (c) To gain access to the Marvell Extranet, Marvell requires applicants to complete a
15 registration form which identifies the user and products of interest. A Product Manager at Marvell
16 then reviews the registration application and decides what Extranet folders (categories of private
17 information) the applicant will be allowed to view based upon the user's specific need. After an
18 NDA is signed by the user, the user is assigned a user identification (his or her e-mail address) and a
19 secure password. The user is then directed to the "Terms of Use" and prompted to click an "Accept"
20 button, a requisite to entry to the site. The Terms of Use incorporate the NDA and a limited use
21 license agreement.

22 (d) Highly sensitive files available on the Marvell Extranet require an additional
23 download password. To get such a password, the user must first e-mail Marvell and request a
24 temporary password. Marvell then e-mails the user a unique password which is only for a particular
25 download. The password expires after sixty minutes.

26 (e) Every downloaded file incorporates a hash code which identifies the user and
27 records the date and time of the download in an alphanumeric code. A confidential watermark is
28 also incorporated in three locations in the downloaded file. Marvell maintains computer records

1 showing user activity on the Extranet including the name of the customer and its authorized
 2 employees, the date and time of log-ins and a description of any downloaded material.

3 6. Netgear's website describes Netgear's mission as "to be the preferred customer-driven
 4 provider of innovative networking solutions for small businesses and homes." Because Netgear's
 5 customer base is home users and small businesses, Netgear purchases products from Marvell's Link
 6 Street and DX product lines. Marvell permits certain Netgear employees to access Marvell's
 7 Extranet to review and consider such products.

8 7. Defendant Zhang began working at Netgear as a switch design engineer on August 14,
 9 2000. He was promoted to Product Development Manager in December of 2001 and was
 10 responsible for Ethernet hub and switch development. He had responsibility for managing the
 11 development and deployment of small and medium sized business products. On November 6, 2003
 12 he signed Marvell's Limited Use License Agreement on behalf of Netgear, which provides in part:
 13 "Marvell hereby grants to Licensee . . . a non-exclusive non-transferable, non-exclusive, royalty-free
 14 limited license to use and, if required, modify [the software modules comprising the Marvell
 15 Prestera Software Suite, and any Marvell specified documentation thereon, provided by Marvell to
 16 Licensees] for (i) Licensee's internal evaluation in connection with development of Licensee's
 17 Products and/or Licensee's Software for use exclusively with Marvell's Products . . ." Ex. 33 at §
 18 2.1. Zhang, on behalf of Netgear, further agreed that "Licensee shall maintain in confidence
 19 Marvell's confidential Information in accordance with the terms of that Non-Disclosure Agreement
 20 ('NDA') most recently entered into by Licensee and Marvell or any Marvell Affiliate." *Id.* at § 4.
 21 Zhang acknowledged that the NDA had been renewed on August 21, 2003. The NDA provides,
 22 among other things, that "Receiver agrees not to use any Confidential Information for any purpose
 23 except to evaluate and engage in discussions concerning a potential business relationship between
 24 Company and Marvell" (Exs. 22 at ¶ 3; 34 at ¶ 3); "Receiver agrees that it shall take all reasonable
 25 measures to protect the secrecy of and avoid disclosure and unauthorized use of Confidential
 26 information" (*id.* at ¶ 4); "All documents . . . containing or representing Confidential Information
 27 and all copies thereof in the possession of Receiver . . . shall be promptly returned to Discloser upon
 28 Discloser's request or upon the termination of this Agreement. *Id.* at ¶ 7. Confidential information

1 is broadly defined by the NDA and required to be marked as “‘Confidential,’ ‘Proprietary’ or the
 2 substantial equivalent thereof.” *Id.* at 2. Zhang had default access to the Marvell Extranet as
 3 Netgear’s Product Manager. He was given a user name and password. Zhang knew that Netgear
 4 was governed by Marvell’s Extranet Terms of Use and that he had to comply with those terms. *See*
 5 Ex. 21. Zhang was personally governed by Netgear’s Employee Invention Assignment and
 6 Proprietary Information Agreement. Ex. 38. Although a copy of that agreement signed by Zhang
 7 apparently could not be found by Netgear, the evidence was highly persuasive that he had, in fact,
 8 signed it. Exhibit 39 lists Zhang as a signatory and Wylea Kirkpatrick, who worked in the personnel
 9 office at the time, confirmed she had seen a copy of the agreement that Zhang signed. Her job duties
 10 included making sure that the appropriate employees signed the Agreement.

11 8. In the Fall of 2004 and Spring of 2005, Zhang applied for employment with both Marvell
 12 and Broadcom. He interviewed at Marvell on February 14, 2005 and signed a unilateral non-
 13 disclosure agreement with Marvell which was similar to one he previously signed with Netgear. Ex.
 14 32. On March 3, 2005 he received an employment offer from Marvell. He also received an offer
 15 from Broadcom, but it was not clear from the evidence when the offer was made or when he
 16 accepted it. On March 8, 2005 Zhang e-mailed his supervisor at Netgear and indicated that he had
 17 accepted a job at Broadcom in the area of strategic product planning and intended to leave Netgear
 18 by the end of March 2005. On March 10, 2005 Zhang also advised those with whom he had
 19 interviewed at Marvell that he was not taking Marvell’s offer of employment. He told Marvell that
 20 “I will remain at Netgear for a few weeks for the transition and continue to drive existing committed
 21 projects for delivery. To avoid any conflict of interests, I would excuse myself from involving
 22 chipset decisions for new projects.” Ex. 31. Zhang agreed to extend his last day at Netgear to April
 23 15, 2005 because Netgear was having difficulty finding someone with the qualifications necessary
 24 for the position Zhang had. The evidence is unclear as to what work Zhang actually did for Netgear
 25 after he indicated he had accepted a position with Broadcom.

26 9. (a) On March 9, 2005 Zhang downloaded the following information from the Marvell
 27 Extranet using the authorization he had for access:

28 DATASHEET- 88E6185, 88E6182, 88E6155, 88E6152, Gigabit Ethernet Switch

1 RD-88E6095-48F4G Reference Design Schematics
2 48FE +2GE Managed and Stacked System Hardware System Design Specification
3 RD-88E6095-48F4G Design and Layout Guidelines
4 RD-88E6095-48F4G Reference Design BOM
5 RD-88E6095-48F4G Gerber Files
6 SOHO Switch Software Architecture Specification
7 SOFTWARE - SOHO Switch Drivers DSDT Ver 2.3b
8 WHITE PAPER - Auto-Neg/MAC Interface
9 WHITE PAPER - Auto-Neg/MAC Interface
10 WHITE PAPER - Back-Pressure for Flow Control
11 WHITE PAPER - Common Mistakes with Ethernet System
12 WHITE PAPER - Flow Control Explained
13 WHITE PAPER - How to Quote, Measure and Use Power
14 WHITE PAPER - Supply Noise Measurement
15 WHITE PAPER - Tutorial on Clock PPM Effects
16 WHITE PAPER - Tjc, Tja & Temperature Calculations
17 Bailout for Prestera 98DX270 and 98DX273
18 Hardware Design Guide for Prestera 98DX250/253/260/263/270/273
19 Hardware Specification for Prestera 98DX250/253/260/263/270/273
20 Product Brief - 98DX253/263/273
21 Functional Errata and Restriction for DX166/166R/246/250/260/270
22 FUNCTIONAL SPECIFICATION & REGISTER SET FOR
23 98DX166/166R/167/167R/246/247/250/253/260/263/270/273/803
24 BSDL Model for 98DX273 Rev A1
25 IBIS Model for 98DX250/253/260/262/263/270/273/803 Rev A1
26 Bailout for Prestera 98DX803
27 Hardware Specification for Prestera 98DX803
28 Product Brief- Prestera 98DX803

FUNCTIONAL SPECIFICATION & REGISTER SET FOR

98DX166/166R/167/167R/246/247/250/253/260/263/270/273/803

BSDL Model for 98DX803 Rev A1

IBIS Model for 98DX250/253/260/262/263/270/273/803 Rev A1

Bailout for 98EX126-A

Hardware Specification - Prestera 98EX116, 98EX126 and 98EX136 Packet Processors

FUNCTIONAL ERRATA- PRETERA PACKET PROCESSOR

98EX116-N98EX126-A

9 (b) On March 16, 2005 Zhang downloaded the following information from the
10 Marvell Extranet:

Ballout for 98EX126-A

APPLICATION NOTE - AN-171 Policy and Meter Configuration Guidelines

APPLICATION NOTE - AN-146-FC and HOL Configuration for Prestera Devices

APPLICATION NOTE - AN-148 Implementing a GbE Desktop Value-Added

Solution using the Prestera 98DX240 and 98EX126 Devices

APPLICATION NOTE- Prestera Hardware Design Guide for EX/FX/MX

APPLICATION NOTE - AN-126 Thermal Management and Power consumption

for the Prestera Packet Processor

APPLICATION NOTE- an-118 ppm Differences Between Rx Clock and Tx Clock

APPLICATION NOTE - AN-I 02 Prestera Systems Power Sequencing

APPLICATION NOTE - AN-109 1Pv4 Routing Engine Data Structure Memory

Consumption in the Prestera-EX Packet Processor Family

APPLICATION NOTE- AN-122 Broadcast and

APPLICATION NOTE- AN-151 Implementing Auto-Media Detect in 88E1111/4x

Transceivers with Prestera EX/MX Packet Processors

APPLICATION NOTE- AN-67 Powering Up/

Multiple Power Supplies of Different Voltages

APPLICATION NOTE - AN-79 Implementing Nested VLANs Using the Prestera

1 Devices, 98EX and 98MX Family
2 APPLICATION NOTE - AN-80 Prestera Packet Processor Memory Usage
3 APPLICATION NOTE - AN-89 Back-end Port Configuration in Prestera Packet
4 Processors
5 Application Note - Value Blade Software Architecture
6 DB-98EX126-12G750 BOM
7 DB-98EX126-12G750 Schematics DB-98EX126- 12G750 User Manual
8 EV-64260A-750CX-PCI User Guide
9 WxWorks BSP User Manual for EV-64260A-750CX-PCI
10 (c) On March 18, 2005 Zhang downloaded the following documents from the
11 Marvell Intranet:
12 DATASHEET- 88E1149 Quad-Channel Gigabit Ethernet PHY
13 APPLICATION NOTE - 88E1149 PCB Layout Guidelines
14 APPLICATION NOTE - Alaska MDI Interface Design
15 APPLICATION NOTE - Measuring Supply Noise
16 APPLICATION NOTE - Oscillator References for Gigabit PHYs
17 APPLICATION NOTE- Using Marvell PHYs in Backplane Applications
18 APPLICATION NOTE - Crystal Oscillators
19 APPLICATION NOTES - Differential Single Impedance Calculations
20 SPREADSHEET
21 APPLICATION NOTES - Alaska Gigabit Magnetics
22 APPLICATION NOTES - Alaska Gigabit Magnetics
23 MODELS - 88E1149-BAM(BGA) BSDL Model
24 MODELS - 88E1149-TAH (TQFP) BSDL Model
25 WHITE PAPER - How to Quote, Measure and Use Power Numbers
26 WHITE PAPER - BER Vs. Packet Loss
27 WHITE PAPER - Auto-Neg/MAC Interface
28 WHITE PAPER - Auto-Crossover & Parallel Detect

1 DATASHEET - 98MX6x5-A

2 APPLICATION NOTE - AN-143 Controlling Traffic to the CPU for 98EXlxx - C/D
3 and 98MXxx Prestera Packet Processor4 10. (a) The volume of these three downloads contrasts markedly with the total of nine
5 documents Zhang had downloaded from the Extranet during the fourteen month period before
6 March 2005. There is no evidence that he needed any of the materials from the three March
7 downloads to "drive existing committed projects for delivery."8 (b) The downloaded documents dealt with a broad range of Marvell products and
9 contained what Marvell considered confidential, proprietary information. Exhibit 18 graphically
10 shows Zhang's downloading activity during the course of Zhang's employment and how it ran
11 below that of all other Netgear employees combined until March of 2005 when his downloads were
12 many times greater than those of all other Netgear employees' combined.13 (c) The only document downloaded by Zhang from the Marvell Extranet that he
14 shared with Broadcom or any other party is Exhibit # 28 (same as page 96 of Exhibit 5) (a page of
15 the hardware specifications for 98 DX250/253/260/263/270/273). That page is watermarked
16 "Marvell Confidential Under NDA#121011740" and has a footer stating "CONFIDENTIAL."
17 Although most of the information on the document was known in the industry, it reveals electrical
18 current consumption under extreme conditions which would be valuable to a system designer. *See §*
19 *11 below.*20 11. The Government proved through the tedious, and at times highly technical, testimony of
21 George Hervey, the senior engineer with Marvell in charge of all customer support for Marvell
22 products, that some of the information Zhang downloaded had independent value from not being
23 generally known to, and not being readily ascertainable by, the public.² Specifically, Hervey
24 discussed Government's Exhibits 1 through 16 which the Government sought to prove contain trade
2526

27 ² Although defendant contended that the Government failed to prove that the downloaded
28 information derived independent economic value from not being generally known to the public, he
offered limited evidence to contest Hervey's testimony that the information was valuable. He
focused more on challenging the Government's claim that Marvell took reasonable measures to keep
such information secret.

1 secret information. Although Hervey testified that much information contained in those exhibits
 2 was available to the public, the combination of the information in each exhibit showed Marvell's
 3 product design choices and how the features of its products were implemented. This information is
 4 carefully guarded by Marvell and would be of value to a competitor who could use the information
 5 in making its own design choices or it could use the information to design tests that would exploit
 6 weaknesses in competing Marvell products and cause them to perform poorly under particular
 7 circumstances. Hervey also explained that certain pieces of information within the exhibits by
 8 themselves have independent value from not being generally known to, or readily ascertainable by,
 9 the public. The following table lists: (1) the sixteen exhibits that the Government introduced, (2) the
 10 nature of the asserted economic value from not being publically known of both the compendium of
 11 information in the exhibit and of certain information on individual pages from the exhibit, (3) what
 12 warning the exhibit bears indicating it is confidential and (4) the date of Zhang's download.

13 Where the Government failed to sustain its burden of showing, for each piece of information,
 14 the economic value of not being generally known to the public, the court explains its reasoning in
 15 parentheses below the description of the information. Where the Government sustained its burden,
 16 the court either simply describes the information or explains why the burden was met without using
 17 parentheses.

18 Alleged Trade Secret	19 Description of Information and Alleged Economic Value from Not Being Generally Known to the Public	20 Indications on Document That It Is to Be Kept Secret	21 Date When Zhang Downloaded Document
22 Government Exhibit 1: Link Street™ 88E6152/88E6155/, 88E6182/88E6185 Datasheet 23 Specific pages that contain purported trade secret information: 24 a. pg. 6: 88E6152/88E6155/88 E6182/88E6185 Device Differences;	25 <i>Compendium of information</i> For Marvell's Link Street chip family, compendium of information shows the functional description of the device, the interfaces on the device, the electrical power needed to power the device and specific design choices made by Marvell. Some of the design choices continue to be used in Marvell's new generation of products. Public disclosure of information would, among other things, allow competitors to take advantage in the marketplace of how the multiple features of Marvell's product share the	26 Watermark and footer state “confidential”	27 3/9/2005

1 2 3	b. pg. 69: Format of the Address Translation Unit Database; c. pg. 95: Describes the distributed switching architecture;	same implementation. Has independent value from not being generally known because it has a design and implementation that competitors do not have.
4 5	d. pg. 176: Shows a register and describes a method of gathering statistics from the device.	<u>Specific pages containing purported trade secret information</u>
6 7 8		a. Shows differences between the four devices within the Link Street family. What features are enabled for each device is based on Marvell's knowledge of the industry and understanding of the market. (Hervey's testimony did not establish beyond a reasonable doubt that Marvell's knowledge of the industry and market was not known by the public and thus had independent economic value from not being known by the public).
9 10 11 12		
13 14 15 16		b. Shows exact format of forwarding databases, revealing some features that are not traditionally present in a forwarding table such as priority indication, and Marvell's unique design choices such as field multiplexing for reducing memory footprint.
17 18 19 20		c. Describes Marvell's implementation of the distributed switching architecture (DSA), which enables two or more devices to behave as a single device. Although the idea of making two devices behave as one by setting particular TAG field is generally known in the industry, the specific bit contents and meaning of Marvell's 4-byte TAG allows it to achieve certain features traditionally difficult to do across chips.
21 22 23 24		d. Describes a register associated with the function of gathering statistics from the device, and the different status of the register bits, which are used to control different operations the device performs. The description shows that Marvell's device enables a CPU to collect statistical data from all ports at once, besides collecting them from individual port.
25 26 27 28		(Hervey testified that this specific

1 2 3 4 5 6 7 8 9	<p>register design allows Marvell to use low-end CPUs to perform the statistics-gathering function, thereby reducing the cost of the system. However, page 176 makes no reference to low-end CPUs, nor does it teach how to implement the function with low-end CPUs. Without more, the evidence does not establish beyond a reasonable doubt that a competitor would necessarily conclude that the purpose of this register design is to allow the use of low-end CPUs. Accordingly, it is not clear that information on this page alone derives independent economic value from not being publically available.)</p>			
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	<p>Government Exhibit 2: SOHO Switch Software Architecture Specification</p> <p>Specific pages that contain purported trade secret information:</p> <ul style="list-style-type: none"> a. pg. 80, section 6.2.1.11: definition of Marvell's API (application program interface), which defines how to set the multi cast rate limits; b. pg. 140, section 6.2.5: API for setting a field for the port association vector. 	<p><u>Compendium of information</u></p> <p>Contains software architecture specifications for certain Marvell small office/home office Ethernet switches, which allow customers to develop software on top of Marvell's device drivers.</p> <p><u>Specific pages containing purported trade secret information</u></p> <p>a. This is a definition of Marvell's Application Interface Layer (API) that gives insight into the maximum, minimum, etc. number of bits per second that the packet flows through. The information would enable a competitor to obtain these number limits that Marvell set and target these limits in their own design to build a more superior chip.</p> <p>b. This is an API for setting a field called port association vector. Implementing three unique features using a single port association vector, instead of three separate fields, is considered a trade secret by Marvell, as this implementation decision is made based on Marvell's understanding of the target market and their experience with customers.</p> <p>(Hervey testified that he did not know whether this implementation is common within the industry, and thus the government did not show that the</p>	<p>Watermark and footer state "confidential"</p>	3/9/2005

1		information was a trade secret.)		
2	Government Exhibit 3: DSDT Release version 2.3a	This is the release note accompanying the actual driver software that Marvell provided to customers. The release note is part of a compressed .zip file and not separately downloadable from the Marvell ExtraNet. It describes the changes from the previous version of software as well as a list of contents in the current version. This document enables a competitor to know certain new features that were added to Marvell's devices.	No confidential marking on the document itself. However, not separately downloadable from compressed .zip file.	3/9/2005
9	Government Exhibit 4: 4:98DX250/260/270, 98DX253/263/273, and 98DX262 Prestera™ Hardware Design Guide Specific pages that contain purported trade secret information: a. pp.12-13, section 2.3: Capacitors; b. pg. 32, section 3.2.5.5: Lane Swapping of HyperG Stack Ports.	<u>Compendium of information</u> Contains a collection of recommendations for customers who design boards using Marvell's Prestera devices. It shows certain design choices that Marvell made such as what type of Gigabit Port there is on the device. Public knowledge would help competitors to estimate the cost of using Marvell's device on a board. <u>Specific pages containing purported trade secret information</u> a. Shows Marvell's suggestions as to the size and characteristics of capacitors to be used for each power rail. This information is derived based on Marvell's design experience, and is applicable to Marvell's devices with certain type of package and interfaces. With this information, a competitor could derive the cost of capacitors for using Marvell's device on a board, and aim to design a device requiring fewer capacitors. (Hervey's testimony is weak regarding the independent economic value of the information, because even if a competitor may derive the cost of capacitors for using Marvell's device on a board, that cost may be trivial in board design because a board contains many different devices that are more expensive than capacitors. Therefore, the evidence introduced does not establish beyond a reasonable doubt that (a) has independent economic	Watermark and footer state “confidential”	3/9/2005

		<p>value from not being generally known by the public.)</p> <p>b. Describes an operation on Marvell's inter-chip ports that allows a customer to reduce the layers on the motherboard by swapping pins (positive pin becomes the negative interface).</p> <p>(The evidence that this information derives independent value from not being generally known is not sufficiently clear to allow a finding of such value beyond a reasonable doubt.)</p>		
		<p>Government Exhibit 5: 98DX250, 98DX253, 98DX260, 98DX263, 98DX270, and 98DX273 Prestera-DX</p> <p>Specific pages that contain purported trade secret information:</p> <p>a. pp. 27-29, Table 4: Pin Functions and Assignment Table key, Table 5: Tri-Speed Network Ports Pin Descriptions, and Table 6: Hyper.GStack PortsXAUI Interface;</p> <p>b. pp. 68-70, Fig. 17: Pin Map Top View Left Side of the ball map for the device, Fig. 18: Pin Map Top View Right Side of the ball map for the device, and Fig. 19, Table 20: Pinout Table;</p> <p>c. pg. 95, section 7.5: Current Consumption;</p> <p>d. Government Exhibit 28: Email from Zhang to Kelly Coffey et al. on 6/2/05 and attachment showing a portion of</p> <p><u><i>Compendium of information</i></u></p> <p>Contains hardware specification for the Prestera product and provides the pinout, thermal characteristics and the electrical description of the device, such as power characteristics, voltage levels, and signaling technology that is used.</p> <p>The document discloses detailed power numbers on each voltage rail covering the worst-case capabilities of the device, instead of a typical power consumption number often disclosed publicly for marketing purpose. The detailed power numbers enable customers to determine the cost of a system built around this device, while they cannot achieve that result using just the typical power number.</p> <p>Based on the information disclosed in this document, such as the pin map, the interface technologies Marvell chose, the detailed power numbers and the worst-case capabilities of the device, a competitor could make their own design choices to yield a device with more optimized design than Marvell's.</p> <p><u><i>Specific pages containing purported trade secret information</i></u></p> <p>a. Describes each interface and the pins associated with the interface, shows Marvell's choice of the SGMII as the signaling method for the Tri-Speed Network Ports and its choice of XAUI interface for the 10 Gigabit ports, with this device being one of the first devices choosing XAUI as the 10</p>	<p>Watermark and footer state "confidential"</p>	<p>3/9/2005</p>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	<p>Table 7.5.2 on Page 96 of Government Exhibit 5. This Table specifies the AC/DC analog current consumption per active 1.25 Gbps SERDES lane.</p>	<p>Gigabit interface.</p> <p>b. Shows Marvell's pin map of the device and its pin placement that aimed at reducing cross-talk between signals. An attempt to associate pins with a given interface in an attempt to reverse engineer would be extremely difficult. (It is not clear beyond a reasonable doubt that this specific information alone would have independent economic value from not being generally known.)</p> <p>c. Description of the current consumed by three different devices under worst-case operating voltages and the current consumed would be unique to Marvell's particular device and not known by the public.</p> <p>d. Describes current consumption per active SERDES under extreme test conditions, with which one could calculate maximum power consumption per active SERDES. Such current consumption data is difficult to obtain without knowing which power pin to use, what the extreme test condition is, and how to power up and down each SERDES, which is done through software. The power consumption values would allow competitors to understand what they need to target in order to effectively compete against Marvell.</p>			
20 21 22 23 24 25 26 27 28	<p>Government Exhibit 6: Functional Errata and Restrictions 98DX166, 98DX166R, 98DX246, 98DX250, 98DX260 and 98DX270 98DX270R</p> <p>Specific pages that contain purported trade secret information:</p> <p>a. pg. 15, FER #24: Aging Time of Storm Prevention Entries Aging is Not Accurate;</p>	<p><u>Compendium of information</u></p> <p>Describes the problems or change in operation of the actual silicon from what is in the specification. Knowledge by a competitor would allow it to design test cases that could cause Marvell's chip to behave poorly or fail, or use the information to market against Marvell with a feature that Marvell cannot include. It would take competitors significant amount of time and research to find the errata on their own.</p> <p><u>Specific pages containing purported trade secret information</u></p>	Watermark and footer state "confidential"	3/9/2005	

1 2 3 4 5 6 7 8 9	b. pg. 19, FER #30: HyperG.Stack Port May Not be Able to Operate at Speed of 12Gbps.	<p>a. Describes a functional erratum with the storm prevention feature in Marvell's device, which is generally used to reduce the overhead time for a CPU to process new addresses. The erratum is that when the storm prevention feature is turned on, address aging is not accurate. With this information, a competitor could build a test case to show that Marvell's storm prevention feature is not usable.</p> <p>b. Describes a functional erratum with the 10-Gigabit port: for certain packet sizes, the ports are not able to run at 12 Gigabits/s though Marvell has so specified.</p>		
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	<p>Government Exhibit 7: Functional Specification and Register Set for Prestera 98DX166, 98DX166R, 98DX246, 98DX250, 98DX260, 98DX270, 98DX803, 98DX167, 98DX167R, 98DX247, 98DX253, 98DX263, 98DX273</p> <p>Specific pages that contain purported trade secret information:</p> <p>a. pg. 25: Secure Control Technology (SCT) Features;</p> <p>b. pg. 252, section 12.2: Unicast Routing Overview;</p> <p>c. pg. 607: Policers and Unicast Routing Engine Configuration Registers.</p>	<p><u>Compendium of information</u></p> <p>Describes, on a step-by-step basis, all the functions that are available for every packet or data that flows through the physical device, as well as configurable options associated with a certain function. It allows users to understand the theory of operation of the device, stage-by-stage.</p> <p><u>Specific pages containing purported trade secret information</u></p> <p>a. Describes Marvell's new feature: Secure Control Technology that is used to protect the CPU from a type of excessive network requests called Denial of Service Attacks. It also shows the different mechanisms with which this feature may work, and different control options Marvell provided to customers who use this feature. Public knowledge would enable a competitor to understand what Marvell was offering to the customers in order to battle Denial of Service Attacks, which became a major threat to networks in the 2003-2004 time frames.</p> <p>b. Describes a new routing feature being introduced to this class of products. Section 12.2 and what follows give an overview of how Marvell implements this feature, which did not exist in prior-generation</p>	Watermark and footer state "confidential." Has second level of password protection.	3/9/2005

	<p>1 solution, with only minimal changes to 2 the predecessor chips. With this 3 information, a competitor could copy 4 Marvell's approach to provide the 5 routing function to their own products. 6</p> <p>7 c. The table summarizes a list of 8 registers and tables used to configure a 9 rate-limiting mechanism within the 10 device called Policer. Public 11 knowledge would enable a competitor 12 to understand the different controls 13 associated with Policer and the limits of 14 Policer's capability.</p>			
	<p>9 Government Exhibit 8: 10 Functional Errata 11 Register 12 Misconfigurations and 13 Restrictions 98EX116, 14 98EX128 and 15 98EX136</p> <p>16 Specific pages that 17 contain purported 18 trade secret 19 information:</p> <p>20 a. pg. 7, FER #6 21 802.1p: 22 Marking/Remarking 23 Ignored on Bridged 24 IPv4 Multicast Packets 25 that are routed;</p> <p>26 b. pg. 15 FER #23: 27 Trunk Load Balancing 28 Limitation of Multicast and Unknown Unicast Packets.</p>	<p>9 <i>Compendium of information</i></p> <p>10 Functional errata for the Prestera 11 EX. Like Government Exhibit 6, this 12 document describes the problems or 13 change in operation of the actual 14 silicon from what is in the 15 specification. Knowledge by a 16 competitor would allow it to design test 17 cases that could cause Marvell's chip to 18 behave poorly or fail, or use the 19 information to market against Marvell 20 with a feature that Marvell cannot 21 include. It would take competitors 22 significant amount of time and research 23 to find the errata on their own.</p> <p>24 <i>Specific pages containing purported 25 trade secret information</i></p> <p>26 a. Describes a functional erratum with 27 a feature that may improperly treat 28 certain data packets that come in and incorrectly mark them. Competitor could use this information to design a system or test lab to expose flaws that suggest Marvell not meeting industry standard.</p> <p>29 b. An errata describing the limitations 30 of trunking distribution. Public 31 knowledge could enable competitors to 32 build a system to show poor 33 performances of Marvell's products.</p>	<p>9 Watermark 10 and footer 11 state 12 "confidential"</p>	<p>9 3/9/2005</p>
	<p>26 Government Exhibit 9: 27 Application Note 28 Implementing a Solution Using Two Prestera Devices</p>	<p>26 <i>Compendium of information</i></p> <p>27 Describes a system implementation 28 that uses one Prestera EX device and one Prestera DX device, in the same</p>	<p>26 Watermark 27 and footer 28 state "confidential"</p>	<p>26 3/16/2005</p>

	<p>1 Specific pages that 2 contain trade secret 3 information:</p> <p>4 a. pg. 7: Desktop Line Card Features;</p> <p>5 b. pg. 8, section 5.2: Ethernet Packet 6 Marvell Tag Extension 7 for Cascading Prestera Packet Processors;</p> <p>8 c. pg. 10, section 6.1: Line Card Packet 9 Flow.</p>	<p>system, thereby achieving cost efficiency.</p> <p><u>Specific pages containing purported trade secret information</u></p> <p>a. Shows positives and negatives from using this lost-cost two-device architecture. Specifically, section 5 describes the list of features that the architecture supports, and section 5.1 describes which features of the Prestera EX device are lost due to the use of this architecture. Public disclosure would allow a competitor to use the concept to achieve similar results or accentuate the negatives in competition.</p> <p>b. Describes how the proprietary TAG relates information between the two Prestera devices such that the EX device can take full advantage of the DX device capability. Public knowledge would assist a competitor to design a similar type of system using their own TAG.</p> <p>c. Illustrates step-by-step how data packets flow through the system and how data from the DX device is mapped into the EX feature set. The latter is an important Marvell solution that allowed it to reduce the cost of the system by fifty percent. Public knowledge would enable a competitor to employ similar approach to achieve fifty-percent cost reduction.</p>		
	<p>20 Government Exhibit 21 10: Prestera®- 22 EX/MX/FX Hardware 23 Design Guide</p> <p>24 Specific pages that 25 contain purported 26 trade secret 27 information:</p> <p>28 a. pg. 23-24: Stackup Guidelines;</p> <p>b. pg. 27, Fig. 13: PCB Cut Dimensions;</p> <p>c. pg. 28: Network</p>	<p><u>Compendium of information</u></p> <p>Shows customers how to design a board using Marvell's devices. It also shows certain Marvell design solutions such as the recommended layout of power balls and ground pins on a board.</p> <p><u>Specific pages containing purported trade secret information</u></p> <p>a. Describes the guidelines for how to limit the number of layers that the board requires when using Marvell's device. With this information, competitors who use similar interfaces</p>	<p>Watermark and footer state “confidential”</p>	<p>3/16/2005</p>

	<p>1 Capacitor and Via 2 Position –PS and CS 3 View;</p> <p>4 d. pg. 35, section 3.9: 5 Frequent Layout 6 Errors;</p> <p>7 e. pg. 85: Uplink 8 Interface;</p> <p>9 f. pg. 92: Buffer 10 SDRAM Interface.</p>	<p>in their own chips could provide similar guidelines to their customers. (These stack-up guidelines are very specific to Marvell's products. It is hard to imagine that these guidelines would have value to a competitor absent the remote possibility that its chips are substantially identical to Marvell's. No showing of the existence of such similarity has been made.)</p> <p>b. Describes Marvell's recommendation to customers to use dual via connection in their board design. Dual via connection is known technique in the industry. With this information, a competitor who uses similar types of interfaces with Marvell's product would be able to make similar recommendation to their customers. (Since dual via connection is known technique, it is not clear that a competitor using similar interfaces would need to look at this page to make similar recommendations to their customers. Therefore, no showing of trade secret status.)</p> <p>c. A picture of part of the actual board design, showing the placement of the power balls and how Marvell implements the dual via connection. The placement of the power balls and the ground pins is Marvell's solution to achieve a solid ground delivery as well as efficient power delivery. Public knowledge would enable a competitor to copy this solution without spending efforts to find it out on their own.</p> <p>d. Describes frequent errors that customers have made when using this chip. Describes why in some cases the industry standard might not be the best practice here. (Although one can speculate that this information would be useful, the evidence introduced does not establish that this information derives independent economic value from not being generally known.)</p> <p>e. Describes the uplink interface, a unique Marvell interface it shared with</p>
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	<p>its partners who build compatible devices. Public knowledge would enable competitors to understand the concept and speed at which the interface runs; however, it does not necessarily enable them to use the information to an advantage.</p> <p>(Although this information may have independent economic value from not being generally known, the proof offered does not establish that beyond a reasonable doubt.)</p> <p>f. Describes Marvell's use of an industry standard interface for connecting to a graphic memory. It shows Marvell's design choice, particularly regarding the use of SDRAM rather than other types of DRAM.</p> <p>(Evidence is not convincing that information constitutes a trade secret as SDRAM is widely used in semiconductor chips.)</p>			
	<p>Government Exhibit 11: Application Note AN-109 IPv4 Routing Engine Data Structure Memory Consumption in the Prestera™-EX Packet Processor Family</p> <p>Specific pages that contain purported trade secret information:</p> <p>a. pg. 2: Fixed Size Initial Table;</p> <p>b. pg. 3-4: Memory consumption tools & Examples.</p>	<p><u>Compendium of information</u></p> <p>Describes IPv4 Routing Engine data structure memory consumption in the Prestera-EX Packet Processor family. Compendium of information reveals in detail Marvell's unique hash algorithm for performing the routing look-up functions as well as the performance of that algorithm under different network test cases. If competitors knew this information, they could use it in designing their own devices or to design a test case that would cause Marvell's algorithm to behave poorly. Most sensitive information of all the sixteen exhibits.</p> <p><u>Specific pages containing purported trade secret information</u></p> <p>a. Describes the concept of the hash algorithm. Has independent economic value because knowledge of the algorithm would enable competitors to use the algorithm to obtain the results and advantages Marvell has obtained from the algorithm.</p> <p>b. Describes a way to evaluate the</p>	<p>Watermark and footer state "confidential"</p>	<p>3/16/2005</p>

1		performance and efficiency of the hash algorithm. <i>See (a) above</i> on value.		
2	Government Exhibit 12: Application Note Prestera™ Packet Processor Memory Usage Specific pages that contain trade secret information: a. pg. 2-3: Internal Memory Configuration & Tables Memory Consumption; b. pg. 5: Flow Table; c. pg. 6-7: Flow Lookup Structure.	<u>Compendium of information</u> Describes which control tables exist in which memory and the potential trade-offs that a system designer would have to make given a certain memory. <u>Specific pages containing purported trade secret information</u> a. Describes the different components that make up the internal memory of Marvell's device. (Although this information may have independent economic value from not being generally known, testimony presented did not establish that beyond a reasonable doubt.) b. Describes the capabilities of the Marvell's flow table algorithm and its memory consumptions, without disclosing details of the algorithm. With this information, a competitor may design a test case to cause Marvell's algorithm to fail. c. Describes memory requirements and usage for different flow lookup structures. (As with (a) <i>above</i> , this information probably derives economic value from not being generally known but testimony presented did not establish that beyond a reasonable doubt.)	Footer states “confidential”	3/16/2005
20	Government Exhibit 13: Application Note Software System Architecture for the 98 EX126-98DX240 Value Blade Specific pages that contain purported trade secret information: a. pg. 2: Value Blade Architecture & System Benefits;	<u>Compendium of information</u> Goes through how the software treats the value blade (a line card) that provides enhanced services at lower cost. (The testimony offered did not establish independent economic value from not being generally known.) <u>Specific pages containing purported trade secret information</u> a. A connection diagram showing how devices are connected in the value blade architecture, and the benefits of	Footer states “confidential”	3/16/2005

1	b. pg. 3, section 2.3: System Limitations;	the architecture.		
2	c. pg. 9, section 4.1: PSS Architectural Modifications	<p>b. Describes the features of a Marvell's device that are lost due to the use of this architecture, in other words, the downside of using the architecture. Like Government Ex. 9, item a, public disclosure of this information could allow a competitor to accentuate the negatives in competition.</p> <p>c. Describes the architectural modifications Marvell made to the PSS (software driver for the Prestera Software Suite). (Testimony does not show beyond a reasonable doubt derivation of independent economic value from not being generally known.)</p>		
10	Government Exhibit 14: 88E1149 Datasheet Integrated 10/100/1000 Gigabit Ethernet Transceiver Specific pages that contain purported trade secret information: a. pp. 41-42, 48: Description of a power management scheme using a feature called virtual cable testing.	<p><u>Compendium of information</u></p> <p>Datasheet for Marvell's quad-port Gigabit PHY. As PHY is an industry-standard interface, a large portion of this data sheet is specified according to industry standard. (Although Exhibit 14 does show how Marvell implements a solution to meet those standards and that implementation may be a trade secret, the evidence presented is insufficient to show beyond a reasonable doubt the information derives independent value from not being generally known.)</p> <p><u>Specific pages containing purported trade secret information</u></p> <p>a. Describes a low-power scheme of powering down output driver based on system characteristics. This is the mechanism Marvell uses to allow the device to meet industry standard while consuming less power. Public knowledge may allow a competitor to learn the mechanism and use it in their own products.</p>	Watermark and footer state “confidential”	3/18/2005
25	Government Exhibit 15: 98MX615, 98MX625, 98MX635 Prestera® Packet Processor Datasheet Specific pages that	<p><u>Compendium of information</u></p> <p>Datasheet for the Prestera MX device family. Like Government Ex. 1, here compendium of information shows the functional description of the device, the interfaces on the device, the</p>	Watermark and footer state “confidential”	3/18/2005

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	<p>contain trade secret information:</p> <p>a. pg. 108: Reads and Writes;</p> <p>b. pg. 110: Address Completion.</p>	<p>electrical power needed to power the device and specific design choices made by Marvell. Public disclosure of information as a whole would enable competitors to gain unfair advantage over products manufactured by Marvell as it allows competitors to understand the theory of the device's operation that is unique to Marvell, as well as Marvell's solutions in tackling certain challenges in this type of system design.</p> <p><u><i>Specific pages containing purported trade secret information</i></u></p> <p>a. Describes in which part of the internal/external memory the Marvell device stores certain data, and the options of reading some portions of the memory with burst mode. Public knowledge could enable a competitor to derive the structure of the internal memory in Marvell's device.</p> <p>b. Describes a mechanism to address the challenge when a CPU has to access a much larger addressable memory inside a device than the PCI bus that connects the CPU to the device. This solution allows system designers to place multiple devices on the same PCI bus without allocating its entire memory to any individual device.</p>
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1	Government Exhibit	<u>Compendium of information</u>	Watermark	3/18/2005
2	16: Application Note	Describes Marvell's	and footer	
3	Controlling Traffic to	recommendation on how to control the	state	
4	the CPU for 98EX1xx-	traffic to the CPU in a complex system	"confidential"	
5	C/D and 98MXxx	built around Marvell's device that		
6	Prestera® Packet	receives multiple protocols. Public		
7	Processors	disclosure would reveal vulnerability of		
8	Specific pages that	the system, enabling competitors to		
9	contain purported	effectively bombard the system to make		
10	trade secret	it fail or perform poorly.		
11	information:			
12	a. pg. 10, Table 3:	<u>Specific pages containing purported</u>		
13	Handling Traffic to	<u>trade secret information</u>		
14	CPU by Frame Type;	a. Detailed description of how Marvell		
15	b. pg. 13, Table 4	classifies data packets according to		
16	Sample Queue Usage	different protocols.		
	for Traffic-to-CPU	(Specific testimony explaining how		
	Handling.	the information derives economic value		
		from not being generally known is		
		lacking.)		
		b. Marvell's recommended queue		
		mapping. Although customers have		
		freedom to implement their own queue		
		mapping, for those customers who do		
		follow Marvell's recommendation, this		
		table can be used to design an attack		
		that makes the customers' system		
		perform poorly.		

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18 12. At the time Zhang's residence was searched on June 24, 2005 for files

19 downloaded from the Marvell Extranet, Zhang was questioned about the downloads by the case

20 agent for the FBI. He acknowledged that he had downloaded Marvell files and first said that he was

21 researching certain projects for Netgear and that was the reason that he downloaded the files. After

22 being confronted with the fact that over seventy files had been downloaded and some did not appear

23 to be related to Zhang's work at Netgear, he said that he was studying the files out of engineering

24 curiosity. Zhang adamantly denied that he shared any of the information he downloaded with

25 Broadcom or loaded any of it onto his Broadcom laptop computer. However, a subsequent search of

26 his Broadcom laptop computer revealed that he had, in fact, copied the Marvell files he downloaded

27 from the Marvell Extranet onto his Broadcom laptop. A June 2, 2005 e-mail shows that he

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1 forwarded a page from his March 9, 2005 download (Exhibit # 28) to his colleagues at Broadcom
 2 that tended to confirm that Cisco had not given Broadcom a truthful explanation as to why it chose a
 3 particular Marvell product over a competing one from Broadcom.

4 III. APPLICATION OF LAW TO FACTS

5 A. Counts One Through Three (Computer Fraud and Abuse Act)

6 Counts One through Three allege violations of the Computer Fraud and Abuse Act
 7 (“CFAA”), 18 U.S.C. § 1030(a)(4), which imposes criminal liability on an individual who
 8 “knowingly, and with intent to defraud, accesses a protected computer without authorization, or
 9 *exceeds authorized access*, and by means of such conduct furthers the intended fraud and obtains
 10 anything of value” (Emphasis added). The CFAA does not define the term authorization. The
 11 term “exceeds authorized access” is, however, defined as “to access a computer with authorization
 12 and to use such access to obtain or alter information in the computer that the accesser is not entitled
 13 so to obtain or alter.” 18 U.S.C. § 1030(e)(6). The Ninth Circuit in a recent en banc decision held
 14 that “‘exceeds authorized access’ in the CFAA is limited to violations of restrictions on *access* to
 15 information, and not restrictions on its *use*.” *United States v. Nosal*, 2012 WL 1176119 *8 (9th Cir.
 16 April 10, 2012) (emphasis in original); *see also LVRC Holdings LLC v. Brekka*, 581 F.3d 1127 (9th
 17 Cir. 2009).

18 In *Nosal*, the defendant had worked for Korn/Ferry, an executive search firm. Shortly after he
 19 left the company, he convinced some of his former colleagues who were still working for
 20 Korn/Ferry to help him start a competing business. The employees used their log-in credentials to
 21 download source lists, names and contact information from a confidential database on the company's
 22 computer, and then transferred that information to the defendant. The employees were authorized to
 23 access the database, but Korn/Ferry had a policy that forbade disclosing confidential information.
 24 The defendant was charged under the CFAA with violations of 18 U.S.C. § 1030(a)(4), for aiding
 25 and abetting the Korn/Ferry employees in “exceed[ing] their authorized access” with intent to
 26 defraud. The court held that the defendant had not violated the CFAA because the employees who
 27 acted on Nosal's behalf had authorized access to the database—the fact that they exceeded their
 28 authorized use did not give rise to a violation of the CFAA. *Nosal*, 2012 WL 1176119, at *7.

1 The parties were given leave to file supplemental briefing on the application of the holding in
 2 *Nosal* to the instant case because the en banc decision came out while the instant case was under
 3 submission. The government conceded in its supplemental brief that *Nosal* applies to the facts as
 4 alleged in the Superseding Indictment and as presented at trial in this case. The court agrees. Under
 5 the Ninth Circuit's definition of "exceeds authorized access," *id.*; *LVRC Holdings*, 581 F.3d at 1132-
 6 36, Zhang had "authorized access" to the Marvell Extranet when he downloaded the information
 7 from the Marvell Extranet in March 2005 because he had active log-in credentials at that time.

8 Therefore, Zhang is not liable for violating the CFAA. Specifically he is not guilty of Counts
 9 One through Three.

10 **B. Counts Four through Six (Theft, Misappropriation and Unauthorized Downloading
 11 of Trade Secrets)**

12 Zhang is charged in Counts Four through Six with misappropriating Marvell's trade
 13 secrets by his downloads from the Marvell Extranet on March 9, March 16 and March 18,
 14 respectively, in violation of 18 U.S.C. § 1832(a)(1), (2) and (4) which provide:

15 (a) Whoever, with intent to convert a trade secret, that is related to or included in a
 16 product that is produced for or placed in interstate or foreign commerce, to the
 17 economic benefit of anyone other than the owner thereof, and intending or knowing
 18 that the offense will, injure any owner of that trade secret, knowingly—

19 (1) steals, or without authorization appropriates, takes, carries away, or
 20 conceals, or by fraud, artifice, or deception obtains such information;

21 (2) without authorization copies, duplicates, sketches, draws, photographs,
 22 downloads, uploads, alters, destroys, photocopies, replicates, transmits,
 23 delivers, sends, mails, communicates, or conveys such information;

24 * * *

25 (4) [or] attempts to commit any offense described in paragraphs (1) through (3)
 26 . . . shall . . . be fined under this title or imprisoned not more than 10
 27 years, or both.

28 In *Nosal* the Ninth Circuit pointed out how Congress used broader language than that used in
 29 the CFAA in describing the crimes set forth in 18 U.S.C. § 1832 "where it used the common law
 30 terms for misappropriation, including 'with intent to convert,' 'steals,' 'appropriates' and 'takes'."
 31 *Nosal*, 2012 WL 1176119, at *2 n. 3. Therefore, under § 1832, the elements the Government must
 32 have proven to establish Zhang's guilt are: (1) that Zhang intended to convert information to the

1 economic benefit of someone other than Marvell; (2) that the information constituted a trade secret;
 2 (3) that the trade secret was related to or included in a product that was produced for or placed in
 3 interstate or foreign commerce; (4) that Zhang stole or misappropriated the trade secret from
 4 Marvell; and (5) that he stole or misappropriated the trade secret intending or knowing that the
 5 offense would injure Marvell.

6 **1. Zhang Intended to Convert the Information for His Own Benefit**

7 The defense argued that Zhang had access to all the information that he downloaded and that
 8 the Government failed to prove that the downloads were not made by him in connection with his job
 9 duties as Netgear. The court finds that the circumstantial evidence establishes beyond any
 10 reasonable doubt that the subject downloads were not made by Zhang in the performance of his
 11 duties for Netgear. That circumstantial evidence includes:

- 12 • the timing of the downloads (they were accomplished after Zhang had accepted his position
 13 with Broadcom);
- 14 • the volume of Zhang's downloads after he had accepted the job offer from Broadcom but
 15 still at Netgear was substantially larger than the total downloads of all other Netgear employees;
- 16 • Zhang said that he had removed himself from any new Netgear projects before the
 17 downloads occurred;
- 18 • the downloads included information about products that Netgear had never purchased from
 19 Marvell;
- 20 • no evidence suggested that Zhang needed any of the information "to drive existing
 21 committed projects for delivery" (Ex. 31);
- 22 • the downloaded material was transferred to Zhang's Broadcom laptop computer; and
- 23 • Zhang's responses to questions from the FBI agent at the time of the search of his premises
 24 strongly suggest that he was trying to hide the fact that he had downloaded the documents.

25 The court concludes beyond a reasonable doubt that Zhang intended to convert the
 26 downloaded material for his own personal benefit and not for the benefit of Netgear.

27 **2. The Information Constituted Trade Secrets**

1 [T]he term “trade secret” means all forms and types of financial, business,
 2 scientific, technical, economic, or engineering information, including patterns, plans,
 3 compilations, program devices, formulas, designs, prototypes, methods, techniques,
 4 processes, procedures, programs, or codes, whether tangible or intangible, and
 5 whether or how stored, compiled, or memorialized physically, electronically,
 6 graphically, photographically, or in writing if
 7

8 (A) the owner thereof has taken reasonable measures to keep such information
 9 secret; and

10 (B) the information derives independent economic value, actual or potential,
 11 from not being generally known to, and not being readily ascertainable through proper
 12 means by the public. . . .

13 18 U.S.C. § 1839; *United States v. Chen*, 659 F.3d 815, 827 (9th Cir. 2011).

14 As described in detail in the table above, the material downloaded by Zhang from the
 15 Marvell Extranet consisted of technical and engineering information, including compilations
 16 showing Netgear’s design choices and implementations. It clearly falls within the type of subject
 17 matter that can be protected as a trade secret. *See* 18 U.S.C. § 1839 (“engineering information
 18 including . . . compilations, . . . designs”). However, to be considered a trade secret, the Government
 19 must have proven: (1) that Marvell took reasonable measures to keep such information secret; and
 20 (2) that the information Zhang downloaded derived independent economic value or potential
 21 economic value from not being generally known to, and not being readily ascertainable through
 22 proper means by the public. The Government relied on Exhibits 1 through 8 as showing trade
 23 secrets downloaded on March 9, 2005, Exhibits 9 through 13 as showing trade secrets downloaded
 24 on March 16, 2005 and Exhibits 14 through 16 as showing trade secrets downloaded on March 18,
 25 2005. The evidence is first examined to determine whether the two requirements necessary for
 26 material to be considered trade secret are met.

27 **a. Reasonable Measures to Keep Information Secret**

28 The trade secret nature of information can be lost if reasonable measures are not taken to
 29 protect secrecy. In light of the nature of Marvell’s business, Marvell could not restrict access to only
 30 a select group of its own employees. Existing and potential customers needed to review information
 31 concerning Marvell’s products, including sensitive proprietary, confidential information, in order to
 32 consider the suitability of the Marvell chip sets for incorporation into their (the customer’s or
 33 potential customer’s) devices. The defense showed that some Marvell information that was marked

1 as “confidential” was freely available on the Internet from other than Marvell’s website and that
 2 Broadcom had in its possession some “confidential” Marvell documents which were obtained from
 3 unidentified sources other than Zhang. None of the documents at issue, however, were found on the
 4 Internet or at Broadcom. Although Marvell’s measures were not perfect and some unauthorized use
 5 of information obtained from Marvell was inevitable, Marvell’s measures to maintain secrecy were
 6 reasonable, particularly given that Marvell’s business required that trade secret information be
 7 shared with customers and potential customers. Marvell had an elaborate system that limited access
 8 to its Extranet to those with a need to know. *See* § 5(b)-(e) *above*. The system also allowed Marvell
 9 to trace who accessed the Extranet. *Id.* Documents that were downloaded were clearly marked as
 10 confidential. *See* § 5(e) *above*.

11 The defense did not challenge the security measures that restrict access to Marvell’s business
 12 campus. It focused on what it contended is the inadequate protection of information available on the
 13 Marvell Extranet. Namoni Fine, an attorney whose practice involves advising clients on establishing
 14 procedures to protect trade secrets, was defendant’s primary witness on the alleged inadequacy of
 15 Marvell’s measures to maintain secrecy of its purported trade secrets. She was critical of Marvell
 16 for not being more discriminating in its labeling of its documents, i.e. marking as confidential or
 17 trade secret only those documents that clearly qualify as such. Ms. Fine contended that such overly
 18 liberal marking of information results in a lack of respect for confidential designations and a lack of
 19 understanding as to what documents truly contain trade secrets. Marvell did not distinguish
 20 documents containing trade secret information from those that Marvell wanted kept confidential
 21 even if they did not contain trade secret information. Although Ms. Fine did not identify particular
 22 documents or a class of documents that she believed were marked as confidential but, in fact, were
 23 not trade secrets, the evidence does suggest that Marvell marked everything available through the
 24 Marvell Extranet as “confidential.” Although Marvell could have been more discriminating in its
 25 marking of documents, the evidence does not show that Netgear or any other customer was misled
 26 by, or failed to treat as secret, any Marvell document designated as confidential. In other words,
 27 Marvell’s designation of some documents as confidential when they did not contain trade secrets,
 28

1 does not mean that Marvell lost trade secret status on those documents that actually contained trade
 2 secret information.

3 The court concludes that the Government proved that Marvell took reasonable measures to
 4 protect its trade secret information. Marvell was a company the industry recognized as being
 5 protective of its proprietary and confidential information. In light of Marvell's need to share
 6 information with actual and prospective customers, it went to elaborate lengths to restrict access to
 7 its Extranet and trace downloads from it. This, of course, does not mean that the marking of any
 8 document as proprietary and confidential makes it so. The document must still be proven to have
 9 trade secret status. In this case, we look primarily to Hervey's testimony and whether it established
 10 beyond a reasonable doubt the trade secret status of information in each of the sixteen documents.

11 *See Table in § 11 above.*

12 Ms. Fine also advocated use of encryption techniques. She did not explain, however, how an
 13 encryption system could be utilized in Marvell's business nor the extent of any risk that could be
 14 eliminated by the use of encryption.

15 Ms. Fine also suggested that Marvell's security was deficient because Marvell did not
 16 maintain a practice of immediately revoking the Extranet password of any person whose
 17 employment with a company having access was terminated. Passwords had to be renewed every
 18 120 days but Marvell did not have a practice of terminating access immediately on the departure of
 19 an accessing company's employee. However, since any log-in showed the date, time, name of the
 20 person logging on and nature of the download, a departing employee would know that any download
 21 he or she made in the limited time before his or her password expired could be traced. Under these
 22 circumstances, the risk of a breach of security by one whose password was about to expire was
 23 remote.

24 **b. Potential Independent Economic Value From Not Being Generally
 25 Known**

26 A majority of the documents introduced by the Government as Exhibits 1 through 16 were
 27 shown to each have independent value as compilations of information which showed Marvell's
 28 design choices and how Marvell implemented its designs and product features. *See Table in § 11*

1 *above*. Although much of the information in the downloaded documents is publicly available, the
 2 testimony of Hervey explained the benefit a competitor would gain from having the compilations.
 3 Hervey also identified several pages from the exhibits which contain information of actual or
 4 potential economic value from not being generally known. *See id.*

5 The court identified in § 11 *above* the material downloaded from each of the three charged
 6 downloads which was shown to have independent economic value from not being generally known
 7 to the public and not being readily ascertainable through proper means.

8 **3. The Trade Secret Information Was Related to Various Products Placed in
 9 Interstate Commerce**

10 There is no dispute that the trade secret information that Marvell sought to protect was
 11 information related to various products Marvell placed in interstate commerce, such as the Link
 12 Street line of products and the Prestera line, including the DX, EX and MX.

13 **4. Zhang Stole the Trade Secret Information from Marvell**

14 There is no dispute that Zhang downloaded the information which is the subject the
 15 indictment and, as discussed, the evidence showed that most of it was misappropriated.

16 **5. Zhang Intended or Knew His Offense Would Injure Marvell**

17 The only reasonable inference to draw from the evidence is that Zhang knew that his
 18 acquisition of the trade secret information would potentially injure Marvell. He, at a minimum,
 19 wanted to obtain the Marvell information so that he could become more knowledgeable and thus
 20 gain a competitive advantage over Marvell for himself, Broadcom or for whomever he was working
 21 at the time he saw fit to utilize what he had downloaded.

22 The Government has proved beyond a reasonable doubt that each element of the offense of
 23 theft of trade secrets under 18 U.S.C. § 1832 and, therefore, Zhang is guilty of Counts Four (theft of
 24 compendiums of information of Exhibits 1 through 8 and information on individual pages thereof
 25 identified as trade secrets in the Table in § 11 *above*), Count Five (theft of compendiums of
 26 information of Exhibits 9 through 13 and information on individual pages thereof identified as trade
 27 secrets in the Table in § 11 *above*) and Count Six ((theft of compendiums of information of Exhibits
 28

1 13 through 16 and information on individual pages thereof identified as trade secrets in the Table in
 2 § 11 *above*).

3 **C. Count Seven (Copying and Transmission of Trade Secrets)**

4 Count Seven deals with Zhang's transmission on April 27, 2005 of the trade secrets he
 5 downloaded from the Marvell Extranet to his Broadcom laptop computer. 18 U.S.C. § 1832(a)(2)
 6 proscribes the unauthorized copying, duplicating or transmitting of trade secret information. The
 7 elements of this offense are discussed above. It is clear from the evidence that although Zhang
 8 denied doing so, a search of his Broadcom laptop computer revealed that on April 27, 2005, he
 9 copied the information he downloaded from the Marvell Extranet to his Broadcom laptop computer.

10 Zhang is guilty of Count Seven.

11 **D. Count Eight (Unauthorized Transmission of Trade Secrets)**

12 Count Eight charges that on June 2, 2005 Zhang transmitted Exhibit 28 (Tri-Speed Ports
 13 Table) to Kelley Coffee, a director of field application engineers at Broadcom, in violation of 18
 14 U.S.C. §1832(a)(2). Zhang made the transmission in response to a concern Coffee had as to the
 15 truth of a purported explanation given by Cisco as to why it chose a Marvell device over a
 16 competing Broadcom device. The purported explanation was that the Broadcom device required
 17 "extra componentry" to interface with the Cisco device while the higher voltage Marvell device did
 18 not. Coffee did not think the explanation made sense and Zhang confirmed Coffee's belief that the
 19 explanation made no sense by sending him Exhibit 28, an excerpt from the Marvell DX 2X data
 20 sheet which showed that the Marvell device operated at the low voltage of a standard interface. This
 21 information was not secret. Coffee did not use the information to obtain any benefit for Broadcom
 22 except that he apparently blamed an employee in the Broadcom sales force for not having correct
 23 information about Marvell's standard interface operating voltage.

24 Although the electrical current information in Exhibit 28 constitutes trade secret information
 25 as discussed in § 11 *above*, Zhang did not transmit Exhibit 28 to Coffee for the purpose of disclosing
 26 the electrical current information. Since he sent only the one page from Exhibit 5, it appears that he
 27 intended only to answer Coffee's inquiry.

1 It is certainly possible, or even probable, however, that Zhang knew that Exhibit 28
 2 contained electrical current data that was secret, proprietary information. However, it does not
 3 appear that he focused on that when he transmitted the document to Coffee. If he had wanted to
 4 reveal information about the hardware design of the DX 2X he presumably would have sent more
 5 information. There is no evidence that Broadcom was considering any redesign of its device or that
 6 the information on Exhibit 28 would have been of benefit if it did so. Coffee testified that the
 7 information provided no competitive advantage to Broadcom.

8 The court cannot find beyond a reasonable doubt that Zhang intended to, or knew, that the
 9 transmission would harm Marvell. Therefore, Zhang is not guilty of Count Eight.

10 **E. Count Nine (Unauthorized Transmission of Trade Secrets)**

11 Count Nine charges that on June 24, 2005 Zhang possessed the trade secrets he downloaded
 12 from the Marvell Extranet and transferred to his Broadcom laptop computer. His possession
 13 constitutes a violation of 18 U.S.C. § 1832(a)(2).

14 Zhang is guilty of Count Nine.

15
 16 DATED: May 29, 2012

17
 18 
 19 RONALD M. WHYTE
 20 United States District Judge